OPERATING SUMMARY

TOWN OF

GODERICH

WATER SUPPLY SYSTEM

1974

Ontario

MINISTRY OF THE ENVIRONMENT

MINISTER
Honourable William G. Newman

DEPUTY MINISTER
E. Biggs

ASSISTANT DEPUTY MINISTER
REGIONAL OPERATIONS
J. Barr

REGIONAL OPERATIONS DIVISION

DIRECTOR, SOUTHWESTERN REGION
D. McTavish

MANAGER, UTILITY OPERATIONS
A. Ladbrooke

GODERICH

WATER SUPPLY SYSTEM

Operated for the

TOWN OF GODERICH
by the
MINISTRY OF THE ENVIRONMENT

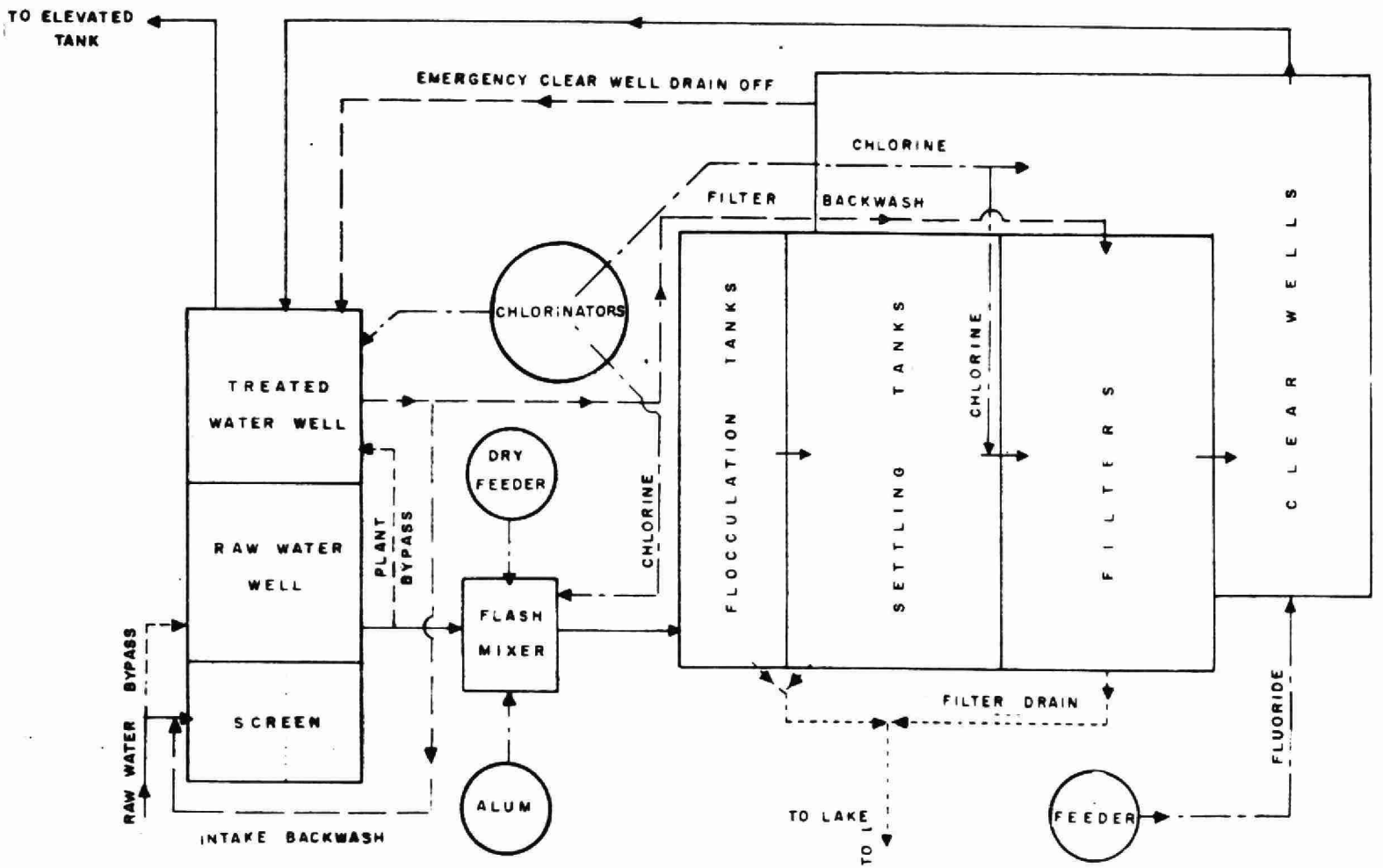
1974 ANNUAL OPERATING SUMMARY

prepared by
Plant Performance Unit
TECHNICAL SERVICES BRANCH
T. Cross, Director

CONTENTS

TOWN OF GODERICH

WATER TREATMENT PLANT



DESIGN DATA

PROJECT Town of Goderich WTP

PROJECT NO. 6-0069-60

NOMINAL CAPACITY

1.5 mgd

RAW WATER SOURCE

Lake Huron

INTAKE

Rock-filled timber crib with cover plate.
Min water depth -
above bellmouth 15.25'
above crib 13.00'
Pipe: 1600 ft of 30" dia concrete
Capacity: 6.4 mgd @ 2.44 fps

SCREENING

Type: Link-Belt travelling screen 3/8" opening
Size: One 3" wide x 23' deep -

LOW LIFT PUMPS

#1 - 0.95 mgd @ 6.7' head
#2 - 1.60 mgd @ 6.7' head
#3 - 1.60 mgd @ 6.7' head

FLASH MIXING

Chamber size: One 7.67' x 7.67' x 8.50'
Volume: 500 ft^2 or 3125 gal
Detention: 3.1 min @ 1.5 mgd
Mixer: 'Lightnin" with 30" dia propeller 84 rpm

FLOCCULATION

Stuart-Carter walking beam flocculator mechanism
Tank Size: Two 14.5' x 20.5' x 15.7' deep
Total Volume: 9340 ft^3 or 58,400 gal
Detention: 56 min @ 1.5 mgd

SEDIMENTATION

Size: Two 61.5' x 20.5' x 7.5' deep
Volume: 19,100 ft^3 or 120,000 gal
Detention: 1.9 hr @ 1.5 mgd
Overflow: 590 gpd/ft^2

FILTRATION

Type: Dual media filters
Size: Four units 12' x 12'
Rate: 3.6 igpm/ft^2 @ 3 mgd
Backwash: 3470 igpm

CHLORINATION

One W & T 100 lb/day (prechlorination)
One W & T 10 lb/day (post chlorination)
One W & T 100 lb/day (standby)

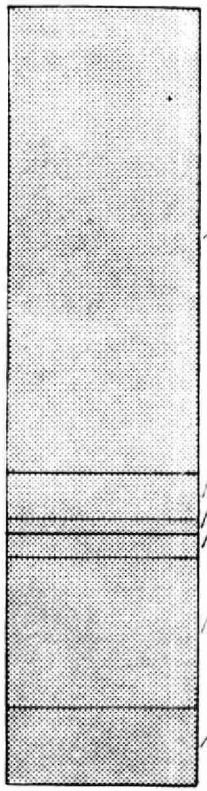
STORAGE

Clear wells - 24,000 gal
Reservoir - 91,400 gal
Town elevated tank - 200,000 gal
O.H. elevated tank - 250,000 gal

HIGH LIFT PUMPS

#4 - 0.75 mgd @ 315' head
#5 - 1.25 mgd @ 315' head
#6 - 1.25 mgd @ 315' head
Combined #4 & 5 or 6 2.00 mgd

ANNUAL COSTS



1974 OPERATING COSTS

- SALARIES & WAGES 59 %
- EMPLOYEE BENEFITS 6 %
- TRANSPORTATION & COMMUNICATIONS 2 %
- SERVICES 3 %
- SUPPLIES & EQUIPMENT 20 %
- AQUISITION/CONSTRUCTION OF PHYSICAL ASSETS
- TRANSFER PAYMENTS
- OTHER TRANSACTIONS 10 %

YEARLY OPERATING COSTS

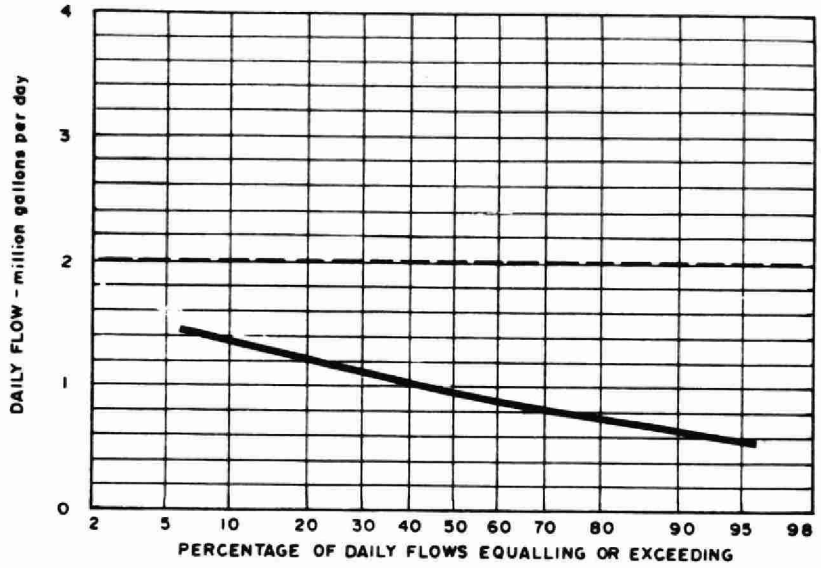
YEAR	WATER TREATED in million gallons	TOTAL OPERATING COSTS	UNIT COSTS cents per 1000 gal
1969	286	59, 478	21
1970	306	64, 042	21
1971	338	70, 734	21
1972	384	77, 020	20
1973	392	80, 258	20
1974	373	107, 773	29

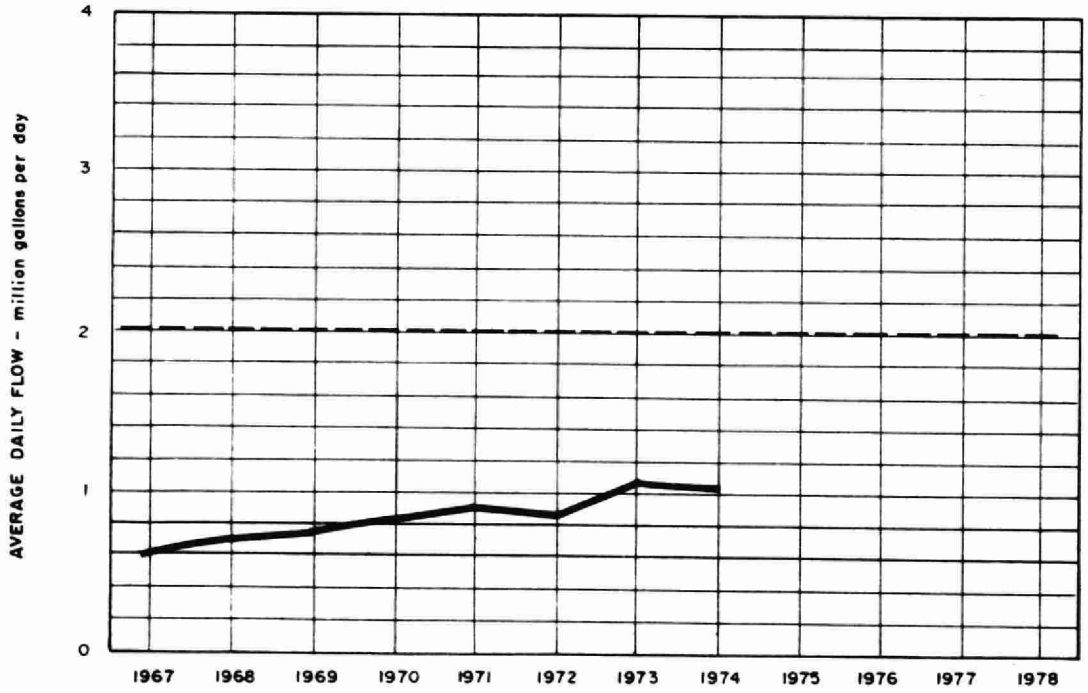
OPERATING EXPENDITURES

Regular Staff	$ 56887	$
Casual (Unclassified) Staff	6497	
TOTAL SALARIES AND WAGES		63384
TOTAL EMPLOYEE BENEFITS		6217
TOTAL TRANSPORTATION AND COMMUNICATIONS		1747
Insurance	1941	
Sludge Haulage		
Repairs and Maintenance	840	
Other Services	345	
TOTAL SERVICES		3126
Machinery and Equipment	5630	
Chemicals	4269	
Utilities	10190	
Other Supplies and Equipment	2364	
TOTAL SUPPLIES AND EQUIPMENT		22453
TOTAL AQUISITION/CONSTRUCTION OF PHYSICAL ASSETS		
TOTAL TRANSFER PAYMENTS		
OTHER TRANSACTIONS		10846
GRAND TOTAL	GRAND TOTAL	$ 107773

PROCESS DATA

FLOWS





DESIGN CAPACITY _ _ _ _ _ _ _ _

PLANT PERFORMANCE

MONTH	FLOWS				RAW WATER		TREATED WATER					
							TURBIDITY		COLOUR		TEMPERATURE	
	TOTAL PLANT OUTPUT million gallons	AVERAGE DAILY FLOW million gallons	MAXIMUM DAY'S FLOW million gallons	MAXIMUM RATE mgd	TURBIDITY (AVERAGE) FTU	COLOUR (AVERAGE) App. units	AVERAGE FTU	MAXIMUM FTU	AVERAGE App. units	MAXIMUM App. units	AVERAGE °F	MAXIMUM °F
JAN	28.95	.93	1.2	1.5	10	10	.9	1.0	<5	<5	34	36
FEB	24.38	.87	.9	1.5	9	5	.9	1.0	<5	<5	34	34
MAR	27.37	.88	.9	1.5	25	5	.9	1.0	<5	<5	34	38
APR	26.35	.88	.9	1.5	48		1.0	1.4	<5	<5	41	48
MAY	29.01	.95	1.0	1.5	61	10	.9	1.0	<5	<5	51	56
JUNE	34.45	1.15	1.5	2.4	24	5	1.0	1.0	<5	<5	59	66
JULY	45.41	1.46	2.0	2.8	5	5	1.0	1.0	<5	<5	62	70
AUG	42.43	1.37	1.8	2.8	6	<5	1.0	1.4	<5	<5	68	74
SEPT	33.78	1.13	1.6	2.3	15	10	1.0	1.0	<5	<5	62	60
OCT	29.54	.95	1.1	1.5	3		1.0	1.0	<5	<5	53	60
NOV	25.86	.86	1.0	1.5	30	10	.9	1.0	<5	<5	46	52
DEC	25.30	.82	.9	2.0	41	20	1.0	1.2	<5	<5	35	38
TOTAL	372.83											
AVG.		1.02	MAXIMUM 2.0	MAXIMUM 2.8	23	8	1.0	MAXIMUM 1.4	<5	MAXIMUM <5	48	MAXIMUM 74

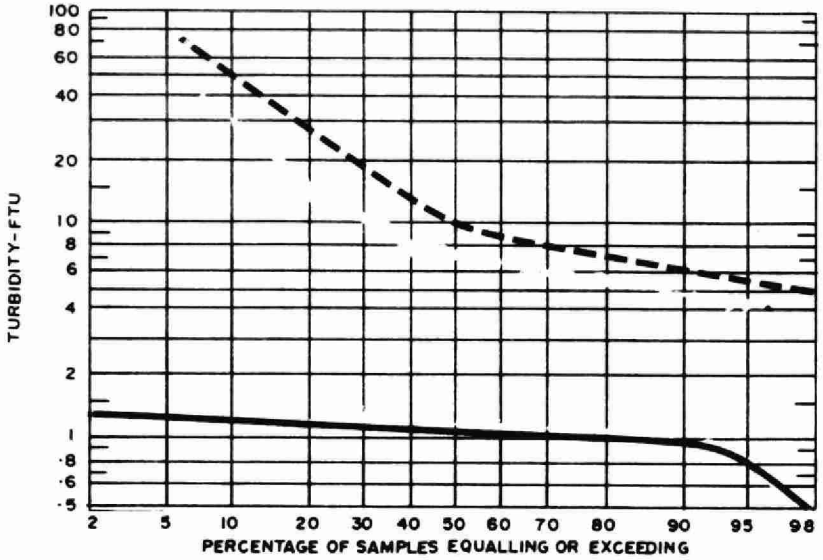
CHLORINATION and DISINFECTION

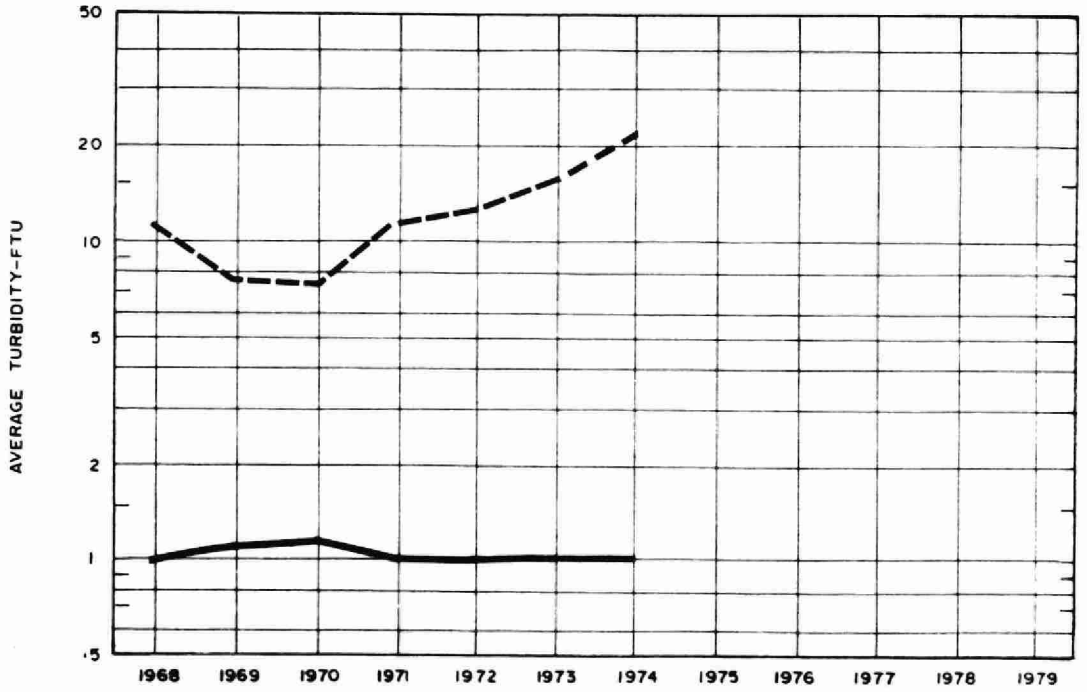
MONTH	RAW WATER					PLANT EFFLUENT		DISTRIBUTION SYSTEM		CHLORINATION			
	NUMBER OF SAMPLES HAVING TOTAL COLIFORM ORGANISMS PER 100 ml OF					NUMBER OF SAMPLES TAKEN	NUMBER HAVING COLIFORM ORGANISMS	NUMBER OF SAMPLES TAKEN	NUMBER HAVING COLIFORM ORGANISMS	TOTAL AMOUNT OF CHLORINE USED pounds	DOSAGE		RESIDUAL IN PLANT EFFLUENT mg/l
	0	1 - 3	4 - 32	33 - 320	> 320						PRE - mg/l	POST - mg/l	
JAN	0	3	0	2	0	5	0	20	0	409	1.3	.15	1.0
FEB	0	1	1	2	0	4	0	16	0	458	1.6	.16	1.0
MAR	0	1	0	3	0	4	0	17	0	520	1.6	.14	1.0
APR	1	0	1	2	0	4	0	16	0	510	1.7	.14	.9
MAY	2	1	2	0	0	5	1	20	0	581	1.7	.15	1.0
JUNE	3	0	1	0	0	4	0	16	0	522	1.4	.13	1.0
JULY	5	0	0	0	0	5	0	20	0	593	1.1	.13	1.0
AUG	3	0	0	1	0	4	0	16	0	582	1.2	.14	1.0
SEPT	1	1	1	2	0	5	0	20	0	473	1.2	.14	1.0
OCT	0	1	2	1	0	4	0	16	0	421	1.2	.14	1.0
NOV	0	1	1	0	1	3	0	12	0	382	1.2	.15	1.0
DEC	1	1	2	1	0	5	0	20	0	345	1.2	.14	1.0
TOTAL	16	10	11	14	1	52	1	209	0	5796			
AVG.	6 (NOTE - Average shown is the GEOMETRIC MEAN)									16 pounds per day	1.4	.14	1.0

TREATMENT DATA

MONTH	FILTER OPERATION					CHEMICALS USED								
	AVG. APPLIED TURBIDITY FTU	FILTER RATE MAX. gpm/ft²	FILTER RATE AVG. gpm/ft²	AVG. FILTER RUN hours	BACKWASH WATER mil. gal.	ALUM AMT. USED gallons	ALUM DOSE mg/l	SOD. SILICATE AMT. USED gallons	SOD. SILICATE DOSE mg/l	SOD. BICARBONATE AMT. USED pounds	SOD. BICARBONATE DOSE mg/l	SODIUM SILICOFLUORIDE AMT. USED pounds	SODIUM SILICOFLUORIDE FLUORIDE LEVEL MAX. mg/l	SODIUM SILICOFLUORIDE FLUORIDE LEVEL MIN. mg/l
JAN	3.0	1.8	1.2	57	.460	670	22	33	2.1	117	1.1	336	1.1	.85
FEB	3.1	1.8	1.2	46	.540	833	22	18	2.2	64	1.2	287	1.0	.80
MAR	3.7	1.8	1.2	56	.500	974	24	33	2.2	116	1.2	376	1.1	.90
APR	4.0	1.8	1.2	43	.560	998	25	78	3.8	273	1.3	356	1.1	.85
MAY	3.7	1.8	1.2	29	1.020	1298	29	102	3.8	357	1.3	358	1.0	.90
JUNE	2.4	2.9	2.1	37	.740	1206	23	75	2.6	263	.9	433	1.1	.95
JULY	2.3	3.3	2.8	35	.780	1250	18	15	2.0	53	.7	426	1.1	.95
AUG	2.5	3.3	2.6	42	.730	150	14	0		0		575	1.1	.90
SEPT	2.8	2.8	2.0	42	.690	620	13	0		0		398	1.1	.90
OCT	3.1	1.8	1.6	42	.810	895	20	18	3.0	63	1.1	313	1.2	.90
NOV	3.4	1.8	1.5	44	.851	936	23	48	3.4	168	1.2	376	1.2	.90
DEC	3.8	1.8	1.2	43	.900	1018	26	78	3.7	273	.8	327	1.2	1.00
TOTAL					8.581	10848	DAYS 326	498	DAYS 158	1747	DAYS 158	4561		
AVG.	3.2	3.3	1.7	43	.024		21		3.1		1.0	380	MAX. 1.2	MIN .80

TURBIDITY





PLANT INFLUENT

PLANT EFFLUENT

WATER QUALITY

PROPERTY	RAW WATER				TREATED WATER				DESIRABLE STANDARDS
	NUMBER OF SAMPLES	AVERAGE	MAXIMUM	MINIMUM	NUMBER OF SAMPLES	AVERAGE	MAXIMUM	MINIMUM	
HARDNESS in mg/l as $CaCO_3$	12	114	132	100	25	121	150	102	80 - 100
ALKALINITY in mg/l as $CaCO_3$	12	90	109	74	25	79	97	62	30 - 100
IRON in mg/l Fe	12	.87	1.80	.20	25	<.05	.20	<.05	Less than 0.3
CHLORIDE in mg/l Cl^-	12	8	13	6	25	9	14	7	Less than 250
pH in pH units	12	8.0	8.4	7.8	25	7.5	8.1	7.2	7.0 - 8.5
FLUORIDE in mg/l F^-	12	0.1	0.2	0.1	25	.9	1.4	.7	Less than 1.2